



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,252	02/27/2002	Tadayashi Kawaguchi	500.41295X00	2571

20457 7590 10/24/2005

ANTONELLI, TERRY, STOUT & KRAUS, LLP  
1300 NORTH SEVENTEENTH STREET  
SUITE 1800  
ARLINGTON, VA 22209-3873

EXAMINER

KACKAR, RAM N

ART UNIT	PAPER NUMBER
----------	--------------

1763

DATE MAILED: 10/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/083,252	Applicant(s) KAWAGUCHI ET AL.	
	Examiner Ram N. Kackar	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10 and 11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 10-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The applicant has invoked sixth paragraph of 35 U.S.C. 112 for these claims. However for the limitation “means for transferring” no corresponding structure is disclosed in the specification. MPEP 2181 directed to **Identifying a 35 U.S.C. 112, Sixth Paragraph Limitation** includes a requirement that written description is necessary and suggests that in this regards compliance with second paragraph is absent. Please see the discussion after the following:

**\*\* WRITTEN DESCRIPTION \*\* NECESSARY TO SUPPORT A CLAIM  
LIMITATION WHICH INVOKES 35 U.S.C. 112, SIXTH PARAGRAPH**

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time

Art Unit: 1763

any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**1. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doi et al (JP 2000-323298-A) in view of Demos et al (US 2001/0008138-A1), Pu et al (20010054383) and Drewery et al (US 6287435).**

Doi et al teach an apparatus (Fig. 9) for plasma processing which has a vacuum vessel forming a plasma producing part 2a, a gas supplying source (means) 4 for supplying a gas to the vacuum vessel, an antenna 1a, 1b generating an electric field in the plasma producing part, a Faraday shield 8a provided at outer periphery of the vacuum vessel, a high-frequency electric source 10 supplying a high-frequency electric power to the antenna and the Faraday shield. The apparatus of Doi et al includes gas source containing boron trichloride and chlorine in etching aluminum and quartz (paragraph 0066) and the voltage applied to the Faraday shield can be adjusted upto 1000 V (paragraph 0047).

Doi et al fail to teach an end point determination and detection device wherein the device detects the end point of cleaning of the inner wall of the vacuum vessel by detecting emission wavelength of reaction products or a material of the vacuum vessel.

Demos et al teach a plasma processing apparatus including an optical emission detection device for monitoring and detecting an end of the cleaning process of the inner wall of the process chamber (abstract). The end point for plasma cleaning may be determined by optical emission technique wherein the emission from SiF line may be monitored at a predetermined wavelength during removing SiO<sub>2</sub> from the interior chamber surface (paragraph 0032).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the detection system as taught by Demos et al in the apparatus of Doi et al in order to monitor and detect the end of cleaning of the interior surface of the chamber.

Doi et al disclose the plasma producing part 2a to be made of silica or ceramic but do not disclose it to be made of alumina.

Pu et al disclose an inductively coupled plasma and disclose a dielectric top lid of alumina to allow electrical power to be coupled through it and teach that alumina is successfully used and is much less expensive than other dielectric materials (Paragraph 35).

Regarding the limitation of transferring a dummy wafer to electrode which supports the wafer, it is noted that structure required to transfer a dummy wafer is no different than the structure to transfer a regular wafer. It is also inherent that there will have to be some means automatic or manual to transfer wafer to the support for processing. However, transfer means are known for plasma processing systems of the type where electromagnetic energy is coupled to plasma through across a dielectric of alumina with faraday shield (Drewery et al – Abstract, Fig 1, Fig 6 and Col 4 lines 63-64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use alumina as the material of plasma producing part for its typical use and inexpensive availability and use transfer means to enable processing on the wafer.

Further, the plasma producing part 2a is made of a dielectric material such as silica or other ceramic. It is noted that when interior surface of the chamber is exposed to the chlorine and boron trichloride,  $\text{SiCl}_4$  or other chloride like  $\text{AlCl}_3$  would be produced and an emission wavelength of a material of the chamber could be monitored. Furthermore, it is argued that

Art Unit: 1763

apparatus of Doi et al in view of Demos et al is capable of detecting emission wavelength of a material of the vacuum vessel such SiCl or AlCl.

Moreover it has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); “Apparatus claims cover what a device is, not what a device does” (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed dos not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114.

### ***Response to Arguments***

Applicant's arguments filed 8/4/2005 have been fully considered but they are not persuasive.

Applicants invoke sixth paragraph of 35 U.S.C. 112 for these claims. However the limitations of “means for performing aging treatment, for performing plasma processing and for performing cleaning treatment” are modified by sufficient structure for achieving the specified function. Therefore 3-prong analysis as prescribed in MPEP 2181 fails.

Nevertheless, all the limitations are disclosed in the prior art as discussed above.

Further, applicant quotes MPEP § 2173.05 (g) which pertains to functional limitations in a claim. The provisions of this section “evaluation and consideration of functional limitation” in

Art Unit: 1763

this context are followed by showing that the disclosed apparatus of prior art is capable of performing the functions referred to in these claims.

Applicant further argues that even though specific gases, voltage to the faraday shield and etch process is disclosed, cleaning and aging is not disclosed. Applicant still further argues that Sixth paragraph of 35 USC 112 requires the consideration of the functions when set forth in a means plus function format.

The treatment of functional limitations relating to intended use in an apparatus claims have been addressed before.

Applicant still further argues against the references individually pointing to their deficiencies. However, unobviousness cannot be established by attacking the references individually when the rejection is based on a combination of references. *In re Novak* 16 USPQ 2d 2041, 2043 (Fed. Cir., BPAI 1989); *EWP Corp. v. Reliance Universal Inc.* 225 USPQ 20 (Fed. Cir. 1985); *In re Keller* 208 USPQ 871 (CCPA 1981); *Ex parte Varga* 189 USPQ 204 (PO BdPatApp 1973); *Ex parte Campbell* 172 USPQ 91 (PO BdPatApp 1971); *In re Scheckler* 168 USPQ 716 (CCPA 1971); *In re Young* 159 USPQ 725 (CCPA 1968); *In re Lyons* 150 USPQ 741 (CCPA 1966).

### ***Conclusion***

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1763

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ram Kackar



Application/Control Number: 10/083,252

Page 8

Art Unit: 1763

Examiner AU 1763